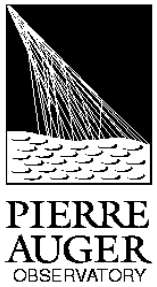


Pierre Auger Project
Project Management

- Project Management Plan
- Project Office
- Site Management
- Management Tools
- Project Cost and Schedule
- Site Operations
- Summary

PIERRE AUGER OBSERVATORY

Principal Documents

- Design Report
- Technical Design Report
- International Agreement
- Project Management Plan
- Requirements and Specifications
- Conventions
- Memoranda of Understanding
- Quality Assurance Plan
- Site Safety Plan
- Work Breakdown Structure (WBS)
- Project Schedule
- Progress Reports

PIERRE AUGER OBSERVATORY

Project Management Plan

The Project Management Plan details the organization, management responsibilities and procedures for use in the construction and operation of the Pierre Auger Observatory

PIERRE AUGER OBSERVATORY

Memoranda of Understanding

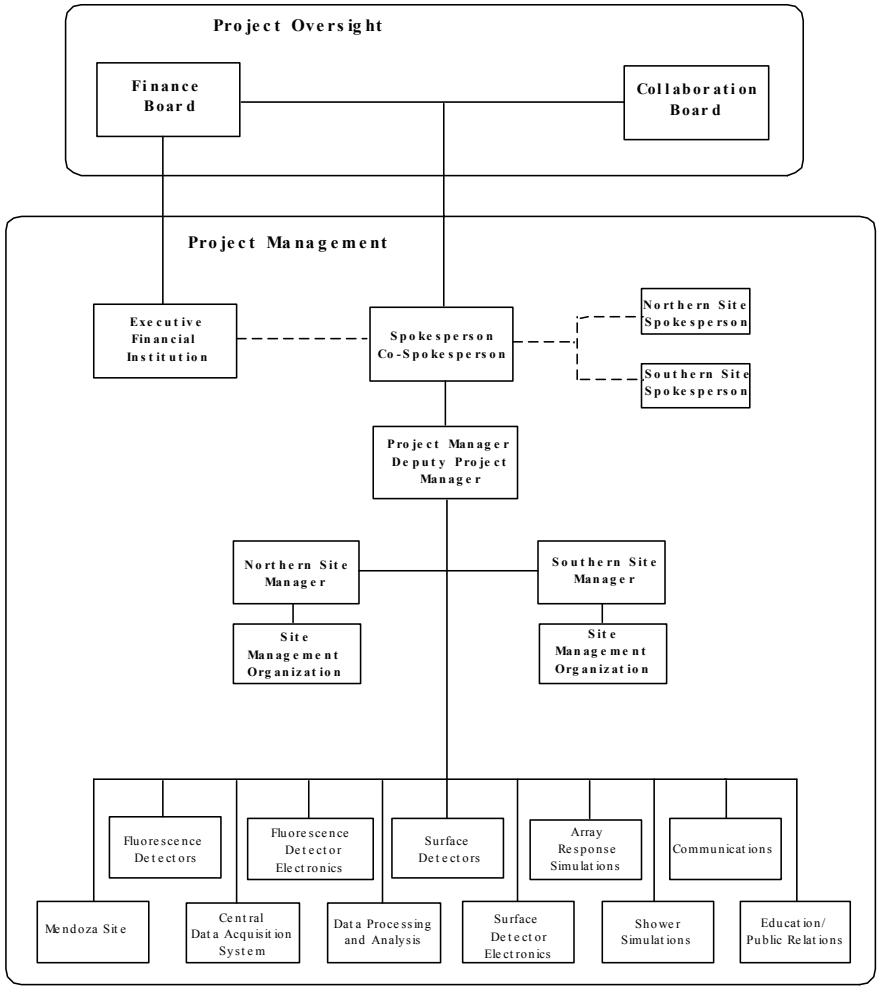
A memorandum of understanding (MOU) is negotiated with each institution. Each year a amendment is prepared confirming the contribution for the coming year. (An MOU is required for voting membership in the collaboration)

The MOU contains:

- Names of participating scientists and engineers
- List of deliverables
- Commitments to installation and commissioning
- Schedule milestones for the deliverables

PIERRE AUGER OBSERVATORY

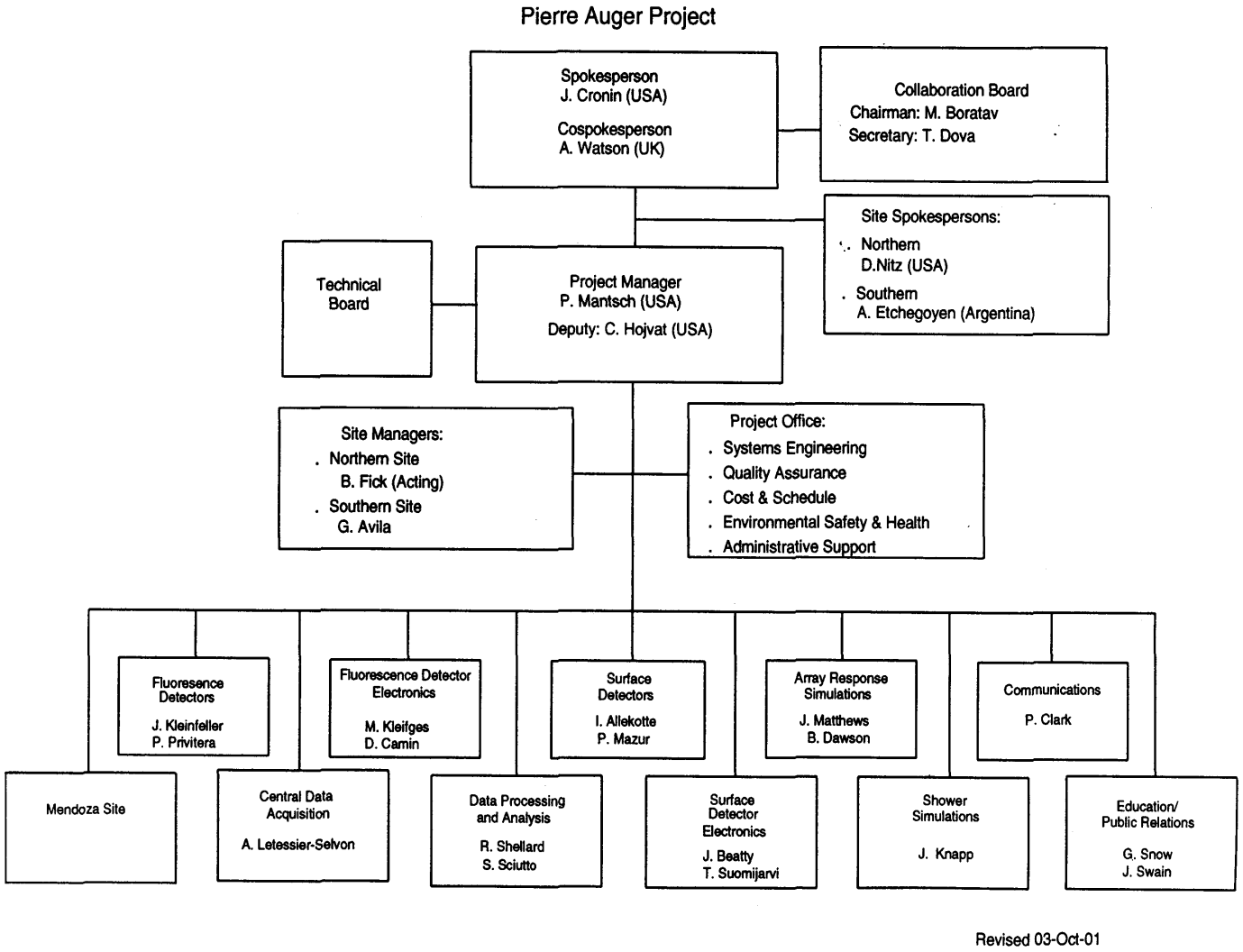
Global Organization

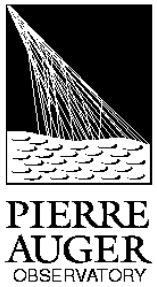


Revised 3/15/99

PIERRE AUGER OBSERVATORY

Management Organization





Auger Project Office
Fermilab

Project Manager - Paul Mantsch

Deputy Project Manager - Carlos Hojvat

Cost Work Breakdown Structure – Rich Andrews/Cathy Newman-Holmes

Schedule – Dean Hoffer/LaVada Cartwright

Project Engineering – Marc Kaducak

Quality Assurance - Jamie Blowers

Environment, Safety & Health Support (*Fermilab Safety Section*)

Drafting/Design Support - *(Fermilab Particle Physics Division)*

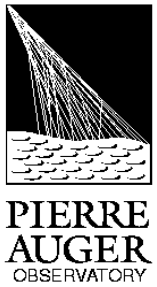
Engineering Support - *(Fermilab Particle Physics Division)*

Clerical – Sarah McCook

PIERRE AUGER OBSERVATORY

Project Office Staff

Auger FB review, Malargüe, October 2001.
Project Management – *P. Mantsch*



Site Management

Agreement was signed with the de Asociacion Cooperadora del Departamento de Fisica de la CNEA to provide administrative services.

- **Act as legal agent for Auger in Argentina**
- **Hold and distribute construction and operating funds**
- **Hold insurance for Auger for activities at the site**
- **Hire employees at the site**
- **Contract for site civil construction**

PIERRE AUGER OBSERVATORY

Observatory Staff

- Site Manager – Gualberto Avila (now full time)
- Secretary - Rosa Pacheco
- Buildings and Grounds Manager – Ricardo Perez
- Ruben Squartini – Computer Systems Administrator

To be added soon:

- Electronics/Electrical Technician – 2
- Mechanical/Electromechanical Technicians – 2/3

PIERRE AUGER OBSERVATORY

Observatory Staff

Auger FB review, Malargüe, October 2001.
Project Management – *P. Mantsch*

PIERRE AUGER OBSERVATORY

Site Manager

Duties and Responsibilities

Oversee site activates

Hire and supervise site staff

Administrate contracts for site work

Support receiving and storage of components and materials

Act as point of contact with land owners & government officials

Responsible for environment, safety and health at the site

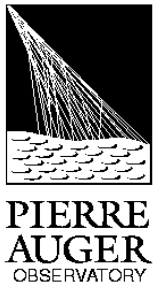
PIERRE AUGER OBSERVATORY

Technical Reviews

- Preliminary Design Reviews
  - December 1998 – September 1999
- Critical Design Reviews
  - July 2001 – May 2002
- Production Readiness Reviews (as required)
- Special Project Manager's Reviews (as required)

Critical Design Reviews

• SD	July 2001
• FD/FDE	August 2001
• SD tube base	September 2001
• Comms	October 2001
• Site/SD Deployment	October 2001
• SDE	December 2001
• CDAS	May 2001



Technical Design Report

The Technical Design Report results from the Technical Design Review process. The Technical Design Report describes in detail the baseline design for the Auger Observatory.

The Technical Design Report is now in draft form pending the completion of the Critical Design Reviews of all of the observatory systems.

PIERRE AUGER OBSERVATORY

Configuration Control

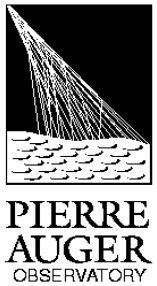
- The Technical Design Report and the design drawings constitute the Observatory baseline configuration.
- Significant changes to the baseline design requires the approval of the Configuration Control Board.
- If the CCB cannot come to a consensus the change request is referred to the Collaboration Board

PIERRE AUGER OBSERVATORY

Quality Assurance

The Auger QA Plan describes the quality expectations of all phases of the project that will insure that every system and component will meet the requirements for performance, reliability and longevity.

The overall QA plan is adapted from the ISO 9000 standard. Each Task Leader (and Sub Task Leader) will oversee the quality requirements and plans within each Task Group. The Project Manager and Quality Assurance Officer will review the Task QA Plans and their implementation.



Quality Assurance Plan

Example feature of the QA plan as used in deployment.

The Quality Control Traveler (Web based) - a collection of the essential information associated with the basic construction units.

For each basic Surface Detector Station unit:

Detector locations
Type and serial numbers of all parts
Deployment history
Maintenance history
etc.

PIERRE AUGER OBSERVATORY

Observatory Site Safety

The personal safety and health of each Pierre Auger employee, collaborator and visitor is of primary importance. Prevention of occupationally induced injury and illness has the highest priority. The objective is a safety and health program that will eliminate disabling injuries and illnesses.

The draft Site Safety Plan is based on features of the safety plans of Apache Point Astronomical Observatory and Fermilab. The Safety Plan is evolving as it is adapted to the needs of the Observatory.

A safety assessment of the site by safety professionals will be held in February.

Cost Estimate

The Work Breakdown Structure

The Work Breakdown Structure (WBS) is an essential tool for Auger cost control and tracking. TheWBS has an element for each component and task that goes into the construction of the Auger Observatory.

Format of the Work Breakdown Structure

WBS element:

quantity, base unit, wastage, spares, cost/unit, materials/station and labor/station

WBS summary columns (Auger Accounting):

- Materials and Services
- Labor
- EDIA (engineering, design, inspection and admin.)
- Contingency
- Escalation
- Total project cost for element

PIERRE AUGER OBSERVATORY

Cost Tracking

- The WBS will provide the *cost baseline* for construction.
- We will track costs at WBS level 3.
- Each quarter Task Leaders will be asked to report:
  - Estimate at Completion (baseline)
  - Total costs and obligations
  - Estimate to complete
- Every six months (collaboration meeting) the Technical Board will meet, review costs, examine variations in the EAC in excess of $100K and make recommendations to the Project Manager for corrective action.

Project Schedule and Schedule Tracking

- The baseline construction schedule follows the WBS structure.
- Detailed schedules are maintained by the Task Leaders.
- A high level schedule (approximately WBS level 3) will be maintained by the project office for overall schedule tracking. Project schedule tracking for construction will be maintained by quarterly reports from Task Leaders.
- Every six months at the collaboration meetings the Technical Board will review the schedule and in case of variations will make recommendations to the Project Manager for corrective action.

PIERRE AUGER OBSERVATORY

Project Funding

Every October/November participating countries provide actual costs for the preceding year and projected funding for the coming year. This information is the basis for the annual budget that is submitted to the Auger Finance Board for review and approval.

All costing and funding is based on calendar years.

Common Fund

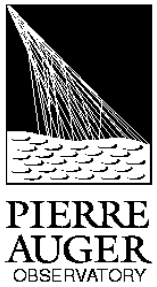
In general, most contributions by participating countries to the observatory are "in kind".

However a Common Fund has been established for certain items that cannot be completely funded by any one country. The common fund contribution is about 20% of the total value of each country's funding for the Auger Project.

Common Fund items include:

- **Photomultiplier tubes**
- **Some fluorescence detector buildings.**

The Common Fund is maintained in an account at CERN



The Operating Fund

An Operating Fund is maintained (separate from project funds) for ongoing expenses at the Observatory. Operating expenses include utilities, building maintenance, site staff, internet service charges, etc.

Operating funds are assessed to each country according to the number of authors the country expects to sign scientific papers.

When construction is complete and the Observatory is in data taking mode the operating costs are expected to be about $3MUS or $15KUS per scientist.

PIERRE AUGER OBSERVATORY

Areas of Concern

- Funds promised are 10% less than the estimated project cost
- Economic crisis in Argentina
- Funding flow for construction
- Common funds flow
- Operating funds flow

PIERRE AUGER OBSERVATORY

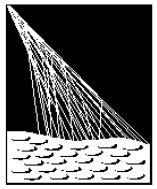
Summary

- The Auger organization and management is functioning smoothly.
- The cost estimate for the Engineering Array was correct for the Engineering Array and has been stable for construction.
- Plans for full construction are underway with management controls in place.

PIERRE AUGER OBSERVATORY

Customs and Importation

- It is essential that import duties on materials and components for observatory construction be waived.
- By agreement with the Argentine Foreign Ministry each participating country obtains customs waivers through their embassy.



Document Management

Classes of Auger Documents

1) **Controlled Documents**
   - Project Management Plan
   - Quality Assurance Plan
   - Site Safety Plan
2) **Design Documents (controlled)**
   - Drawings (Using CERN web based document system)
   - Layouts
   - Specifications
3) **Reference documents**
   - Design Report
   - Technical Design Report
   - Equipment Manuals
   - Software standards
   - Engineering standards
4) **Databases**
5) **Records**